

  
Derrick Brown

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a set point addressed to said force feedback member from a variable measured by said force feedback member;  
variables intrinsic to said force feedback member;  
an estimate of an external interaction with said force feedback member; and  
a state variable of said force feedback member;

a remote model for estimating interactions and state variables of said other member with updating on receipt of data from another remote system; and

resynchronizer means able to send a resynchronization message to said other system.

2. (Amended) The system claimed in claim 1, further comprising a phantom model for obtaining an estimate of state variables of said force feedback member and resynchronizing said estimate on reception of said resynchronization message.

3. (Amended) The system claimed in claim 2, wherein said resynchronizer means comprises comparator means for comparing said estimate of state variables from said phantom model and state variables from said local model so that in the event of a difference exceeding a predetermined threshold said resynchronization means can send a resynchronization message to said phantom model and to said other system.

4. The system claimed in claim 1, further comprising extrapolator means for processing a resynchronization message for updating said remote model received from said other system.

5. (Amended) A system for controlling two remote members, each member being provided with a control system, each of the control systems comprising:

a local model for calculating:

a set point, addressed to the member coupled to the control system, from a variable measured by the coupled member;  
variables intrinsic to the coupled member;  
an estimate of an external interaction with the coupled member; and  
a state variable of the coupled member;

a remote model for estimating interactions and state variables of the member coupled to the other control system with updating on receipt of data from the other control system;  
and

resynchronizer means able to send a resynchronization message to the other control system.

6. (Amended) A method of controlling a force feedback member able to interact with another member, said method comprising:

determining the following parameters using a local model: a set point sent to said force feedback member from a variable measured by said force feedback member, variables intrinsic to said force feedback member, an estimate of an external interaction with said force feedback member, and a state variable of said force feedback member;

determining the interactions and said state variables of said other member with updating on receiving data from another remote system using a remote model;

generating a resynchronization message and sending it to said other system.

7. (Amended) The method claimed in claim 6, further comprising determining state variables of said force feedback member with resynchronization on receiving said resynchronization message using a phantom model.

8. (Amended) The method claimed in claim 7, wherein, at the time of resynchronization, said estimate of state variables from said phantom model and state variables from said local model are compared so that in the event of a difference exceeding a predetermined threshold a resynchronization message can be sent to said other system with a view to new phantom modeling.

9. (Amended) The method claimed in claim 6, further comprising extrapolating to process a resynchronization message from said other system and to update said remote model.

10. (Amended) A computer program including program code means for executing the steps of a method of controlling a force feedback member able to interact with another member when said program runs on a computer, the method comprising:

determining the following parameters using a local model: a set point sent to said force feedback member from a variable measured by said force feedback member, variables intrinsic to said force feedback member, an estimate of an external interaction with said force feedback member, and a state variable of said force feedback member;

determining the interactions and said state variables of said other member with updating on receiving data from another remote system using a remote model; and

generating a resynchronization message and sending it to said other system.

11. (Amended) A medium capable of being read by a reader and storing program code means for executing the steps of a method of controlling a force feedback member able to interact with another member when said program runs on a computer, the method comprising:

determining the following parameters using a local model: a set point sent to said force feedback member from a variable measured by said force feedback member, variables intrinsic to said force feedback member, an estimate of an external interaction with said force feedback member, and a state variable of said force feedback member;

determining the interactions and said state variables of said other member with updating on receiving data from another remote system using a remote model; and

generating a resynchronization message and sending it to said other system.

Please add the following claims:

12. (New) A control system for a force feedback member configured to interact with another force feedback member, comprising:

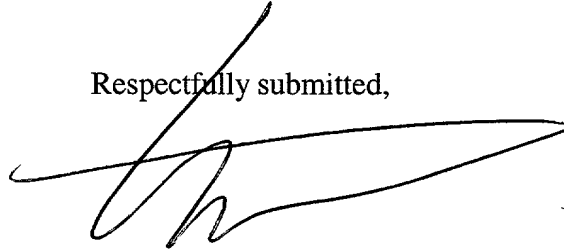
a local model configured to determine a set point addressed to the force feedback member and an estimate of an external interaction with the force feedback member;

a remote model configured to estimate a state variable and an external interaction of the other force feedback member and update data upon receipt of data from the other force feedback member;

a resynchronizer configured to send messages to the other force feedback member.

It is believed that no fees are due in connection with the filing of this Preliminary Amendment. However, if any fees are due, the Commissioner is hereby authorized to deduct said fees from Conley, Rose & Tayon Deposit Account No. 50-1505/5310-03700/EBM.

Respectfully submitted,



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Date: 11/14/01

**Strikethrough Version of Amended Claims**

1. (Amended) A control system for a force feedback member able to interact with another member, of the type with a time constant less than that associated with remote control, ~~characterized in that it includes~~ wherein the control system comprises:

a local model for calculating:

a set point addressed to said force feedback member from a variable measured by said force feedback member;

variables intrinsic to said force feedback member;

an estimate of an external interaction with said force feedback member; and

a state variable of said force feedback member;

a remote model for estimating interactions and state variables of said other member with updating on receipt of data from another remote system; and

resynchronizer means able to send a resynchronization message to said other system.

2. (Amended) The system claimed in claim 1, ~~including~~ further comprising a phantom model for obtaining an estimate of state variables of said force feedback member and resynchronizing said estimate on reception of said resynchronization message.

3. (Amended) The system claimed in claim 2, wherein said resynchronizer means comprises comparator means for comparing said estimate of state variables from said phantom model and state variables from said local model so that in the event of a difference exceeding a predetermined threshold said resynchronization means can send a resynchronization message to said phantom model and to said other system.

5. (Amended) A control system for controlling two remote members, each member being provided with a control system ~~claimed in claim 1~~, each of the control systems comprising:

- a set point, addressed to the member coupled to the control system, from a
- variable measured by the coupled member;
- variables intrinsic to the coupled member;
- an estimate of an external interaction with the coupled member; and
- a state variable of the coupled member;

resynchronizer means able to send a resynchronization message to the other control system.

~~local modeling to obtain~~ determining the following parameters using a local model: a set point sent to said force feedback member from a variable measured by said force feedback member, variables intrinsic to said force feedback member, an estimate of an external interaction with said force feedback member, and a state variable of said force feedback member;



~~remote modeling of~~ determining the interactions and said state variables of said other member with updating on receiving data from another remote system using a remote model;

generating a resynchronization message and sending it to said other system.

7. (Amended) The method claimed in claim 6, ~~including phantom modeling of further~~ comprising determining state variables of said force feedback member with resynchronization on receiving said resynchronization message using a phantom model.

8. (Amended) The method claimed in claim 7, wherein, at the time of resynchronization, said estimate of state variables from said ~~phantom modeling model~~ phantom model and state variables from said local ~~modeling model~~ model are compared so that in the event of a difference exceeding a predetermined threshold a resynchronization message can be sent to said other system with a view to new phantom modeling.

9. (Amended) The method claimed in claim 6, ~~including extrapolation further comprising~~ extrapolating to process a resynchronization message from said other system and to update said remote ~~modeling model~~ model.

10. (Amended) A computer program including program code means for executing the steps of a method of controlling a force feedback member able to interact with another member as claimed in claim 6 when said program runs on a computer, the method comprising:

determining the following parameters using a local model: a set point sent to said force feedback member from a variable measured by said force feedback member, variables intrinsic to said force feedback member, an estimate of an external interaction with said force feedback member, and a state variable of said force feedback member;

determining the interactions and said state variables of said other member with updating on receiving data from another remote system using a remote model; and

generating a resynchronization message and sending it to said other system.

11. (Amended) A medium capable of being read by a reader and storing program code means for executing the steps of a method of controlling a force feedback member able to interact with another member as claimed in claim 6 when said program runs on a computer, the method comprising:

determining the following parameters using a local model: a set point sent to said force feedback member from a variable measured by said force feedback member, variables intrinsic to said force feedback member, an estimate of an external interaction with said force feedback member, and a state variable of said force feedback member;

determining the interactions and said state variables of said other member with updating on receiving data from another remote system using a remote model; and

generating a resynchronization message and sending it to said other system.